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AUTHOR Presmeg, Norma C.; And Others
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ABSTRACT

Consonant with the current concern for achievement of minority students, the two action research projects described in this paper use interviews and case studies of 10 African American high school students to address some issues related to motivation in the learning of mathematics, particularly as this motivation concerns aspects of the family structures of which these students are a part. The data support the suggestion found in the literature that high motivation to learn mathematics is more readily achieved in African American students from two-parent homes. However, motivating factors are complex; among other factors, a negative role model effect is described in contrast to the motivating effect of a relationship with a caring adult who values mathematics learning. (Author/MKR)

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# Family Configuration and Motivation of African American High School Students

Norma C. Presmeg
Catherine Hill
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# FAMILY CONFIGURATION AND MOTIVATION OF AFRICAN AMERICAN HIGH SCHOOL STUDENTS

Norma C. Presmeg, The Florida State University
Catherine Hill, Godby High School
Arthur R. Skelly, Jr., Rickards High School

Consonant with the current concern for achievement of minority students, the two action research projects described in this paper use interviews and case studies of ten African American high school students to address some issues relating to motivation in the learning of mathematics, particularly as this motivation concerns aspects of the family structures of which these students are a part. The data support the literature suggestion that high motivation to learn mathematics is more readily achieved amongst African American students from two-parent homes. However, the motivating factors are complex: amongst other factors, a negative role model effect is described, in contrast to the motivating effect of a relationship with a caring adult who values mathematics learning.

## The Problem and its Significance

With an increasing concern that mathematics education should be fair, equitable, and accessible for all students, there is evidence that this is not the case in many American schools (Mathematical Sciences Education Board, 1990). In particular, African American students are not proportionally represented amongst high mathematics achievers, and in courses which prepare students for the study of mathematics at the tertiary level. The present research project investigated one aspect which has bearing on this issue (Banks & Banks, 1995), i.e., the influences of various family configurations and family members on the motivation of selected African American students in two schools.

Another issue is that research which is carried out in higher education institutions is sometimes perceived by teachers as not highly relevant to their day-to-day classroom activities and pedagogy (Lankford, 1993). The research described in this paper was carried out by two practising high school mathematics teachers in collaboration with a university mathematics teacher educator. The two related projects were chosen by the teachers as deeply significant to their work with African American students in their own mathematics classrooms. One veteran teacher, herself an African American, had achieved highly in mathematics although she came from a single-parent home. Her project, which we call the 'Family Project', investigated the family configurations (father-absent, mother-absent, and two-parent families) and related influences on the achievement and motivation of six of her students. In the second project, the 'Motivation Project', a teacher in his eighth year of teaching mathematics in another school in which 70% of the students are African American, investigated factors - including family configuration - which influenced motivation in the learning of mathematics.

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## Theoretical Framework

"It is generally accepted that school related achievement, attainment, personal and career aspirations, and eventual attainment, are functions of the direct and interactional effects of many factors. Among these are the individual, family and community" (Johnson, 1992, pp. 99-100). Research on single parent versus two parent families and the achievement of the children from these two configurations is mixed, but tends to support the idea of higher achievement among children from the two parent families. However, these findings are influenced by the socioeconomic status of the families involved, since single parent families usually are more economically disadvantaged than two parent families. Weissglass (1994, p. 69) wrote that "It is unwise and counterproductive ... for reformers to ignore the fact that the current effort at reform is occurring at a time when schools are dealing with the effects on children of divorce, single-parent families, alcoholism, homelessness, violence, racial prejudice, sexual and physical abuse, and the widespread availability of drugs." He saw the effects of these conditions in classrooms as resulting in heightened stress levels for teachers. In seeking to understand the background experiences of some of our minority students and how these might influence their learning of mathematics, we adopted the theoretical position that motivation and achievement are influenced by a complex interrelationship of factors, including family configuration. We therefore chose African American students of both sexes from single-parent and two-parent homes for the purpose of learning more about aspects of their family life which influenced their learning of mathematics.

## Methodology

Within this theoretical framework of personal and social factors, it was recognized that a qualitative methodology was appropriate, since it would provide the flexibility required to pursue unexpected issues as these arose. Data collection in both projects included transcripts of interviews with students, and classroom observation of students, as well as documents in the form of achievement and classroom tests.

The ten African American students in the two projects were as follows:

### FAMILY PROJECT

| NAME | SEX | AGE | GRADE | FAMILY |
|---|---|---|---|---|
| **Evant** | M | 15 | 10 | Two-parent |
| **Jamella** | F | 15 | 10 | Two-parent |
| **Tim** | M | 18 | 12 | Father-absent |
| **Trivanna** | F | 14 | 9 | Father-absent |
| **Gerome** | M | 14 | 9 | Mother-absent |
| **Marie** | F | 18 | 12 | Mother-absent |

## MOTIVATION PROJECT

| NAME | SEX | GRADE | CURRENT MATH COURSE | PARENTS |
|---|---|---|---|---|
| **Kizzy** | F | 12 | Explorations Math 2 | Divorced |
| **Mario** | M | 10 | Explorations Math 2 | Divorced |
| **Tremecia** | F | 11 | Geometry | Divorced |
| **Trineshia** | F | 9 | Algebra 1 | Married |

### Data, interpretation and discussion

Our interview protocols tend to support the conclusion that high motivation to learn mathematics is more readily achieved amongst African American students from two parent homes. However, more importantly, our data suggest that the quality of a student's relationship with a caring and encouraging adult who values mathematics—whether in a single parent or a two parent home—is the crucial factor. In some cases our students were motivated to achieve in mathematics by negative or reverse factors: they did not want to grow up to be like a family member whom they did not admire. For instance, Tremecia spoke as follows.

> I look at my brothers and sisters and I get motivated. I do not want to grow up and be a bum. None of them has a regular high school diploma. Some have GED's, and some don't even have that. They don't do anything for themselves. If they need money or something, they mooch off of my parents. I hate that! I want better for myself.

This reverse role-model effect is similar to the phenomenon reported in Presmeg (1991), in which African American prospective teachers remembered poignantly negative experiences with mathematics teachers, which had the effect of causing them to aspire to be more caring and effective teachers than these negative role models were.

Career aspirations, sometimes based on family role-models, were also a strong motivating factor in the desire to achieve well in mathematics. Of the ten African American students in this research, all but one saw mathematics as the gateway to college studies and successful careers. However, their motivations were complex and individual. Mario, who eventually hopes to own his own business, had the following to say regarding his perceptions of college:

> If I don't go to college, I'll never own my own business. I mean I could, but I'd probably go broke because I would not have any formal training. That's why I'm in this program that helps students with their studies. It also provides us with experiences out in the business world, sort of like an internship. Before I entered this program, I did not like school and I had no incentive to do

> good. Now that I have a goal, I want to prove to myself that I can do this. I really like the challenge.

Trineshia had a related concern, as follows:

> I need to do good now so that I can get a scholarship. My parents make a good salary, but I don't think they could afford what a college education costs these days. I just want to try my best so that the rewards could possibly help me and my parents in the long run.

With regard to motivation to do well in mathematics, whether or not a student's parents were divorced appeared to be less important than the quality of a relationship with a parent who cared and valued learning. Tremecia, who lives with her mother, spoke as follows:

> My mother tries to keep on me about my studies. I think that has more to do with the fact that she is now back in school herself. She has held many different jobs, and I think that she wants to get a degree to get a steady job. She wants me to get my education now so that I won't have a hard time in the future. She knows that math is not my best subject. She is sympathetic because she did not do very good in math as a child. However, it is not an excuse to do poorly. She just tells me to try harder, and not to give up.

With regard to achievement, analysis of data from the family project suggests that the two students in this study who live with their fathers appeared to be underachieving in mathematics, while the other four students were achieving satisfactorily. From these data alone, no generalizations can be made. However, from the interviews in both projects it appears that single parents who work because of economic necessity often find it more difficult to devote the time to take an interest in the quality of their child's learning in mathematics. According to research by Nieto (1992), the family as a unit is a significant asset in successful learning by minority students. Having a close-knit family that encourages a child, allows for open and meaningful conversations that facilitate the desire to achieve. Our data support this conclusion.

## References


Banks, J. A. & Banks, C. A. M. (Eds.) (1995). *Handbook of research on multicultural education.* New York: Macmillan.

Johnson, S. T. (1992). Extra school factors in achievement attainment and aspiration among junior and senior high school-age African American youth. *The Journal of Negro Education, 61*(1), 91-116.

Lankford, N. K. (1993). Teacher as researcher: What does it really mean? In P. S. Wilson (Ed.) *Research ideas from the classroom: High school mathematics.* New York: Macmillan.

Mathematical Sciences Education Board (1990). *Making mathematics work for minorities: Framework for a national action plan, 1990 - 2000.* Washington, D.C.: National Academy Press.

Nieto, S. (1992). *Affirming diversity: The sociopolitical context of multicultural education.* New York: Longman.

Presmeg, N. C. (1991). *Black students and university mathematics: Report on a research project to investigate factors underlying difficulties experienced by Black prospective teachers in pure mathematics courses.* Center for the Study of Teaching and Learning, Florida State University, Summer, 1991.

Weissglass, J. (1994). Changing mathematics teaching means changing ourselves: Implications for professional development. In D. B. Aichele & A. F. Coxford (Eds.) *Professional development for teachers of mathematics* (pp. 67-78). Reston, Virginia: National Council of Teachers of Mathematics, 1994 Yearbook.